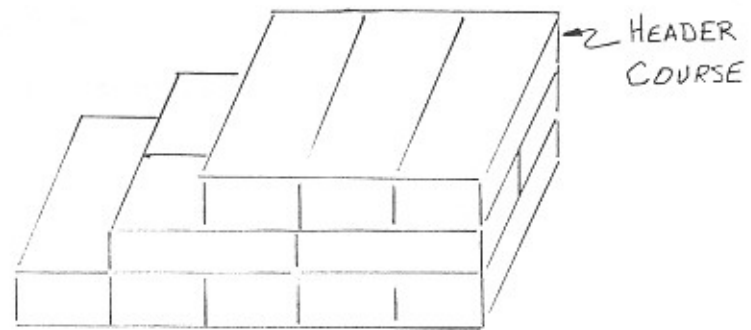


## CHAPTER 13

### MANHOLES, INLETS AND CATCHBASINS

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Introduction</b>                   | There are numerous types of manholes, inlets and catch basins. The standard sheets contain drawings for each type of structure. See standard sheets 720-CBCA, 720-CBST, 720-EDCA, 720-ICCA, 720-INST, 720-INCA, 720-MHAR, 720-MHCA, and 720-MHST. Standard drawings 720-CBCA-01, 720-CBST-01 & 02, 720-EDCA-01, 720-ICCA-01, 05, & 06, 720-INST-01, 720-INCA-01 & 02, 720-MHCA-01 & 02, and 720-MHST-01 can be found in the appendix.                                                                                                                                                                                                                                                                               |
| <b>Structure Prefixes</b>             | Always remember that the letter prefix is for the structure type and the number suffix is for the casting type. Thus, an E-7 inlet would be type "E" box using a type "7" casting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Methods of Construction</b>        | <p>Several types of construction methods are designated for manholes, inlets or catch basins. Some units can be constructed from brick, block, concrete class A or precast when permitted. The materials that are permitted for each type of structure is noted on the applicable standard sheet.</p> <p>When constructing these units in the field, the excavation for the floor slab shall be on firm, stable earth. If rock is encountered, it shall be removed 6" below the bottom elevation and backfilled with "B" borrow.</p> <p>When precast units are used, bases shall be set on a minimum of 4" of compacted "B" borrow. The costs of this "B" borrow is included in the unit cost of the structure.</p> |
| <b>Material Requirements Concrete</b> | Concrete construction shall be in accordance with the requirements of structural concrete spec. Article 702 and reinforcing steel in accordance of spec article 910.01.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Brick or Block</b>                 | Brick or other masonry units shall be laid with joints no exceeding 3/8". If brick is used, at least every 7th course shall be laid as a header course.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

Brick or  
Block  
(cont'd)



In the header course, the bricks are turned so that the mortar joint doesn't run continuously from top to bottom of the structure.

Brick or block structures are required to have a "1/2" mortar plaster coat on the inside and outside of the structure, as designated.

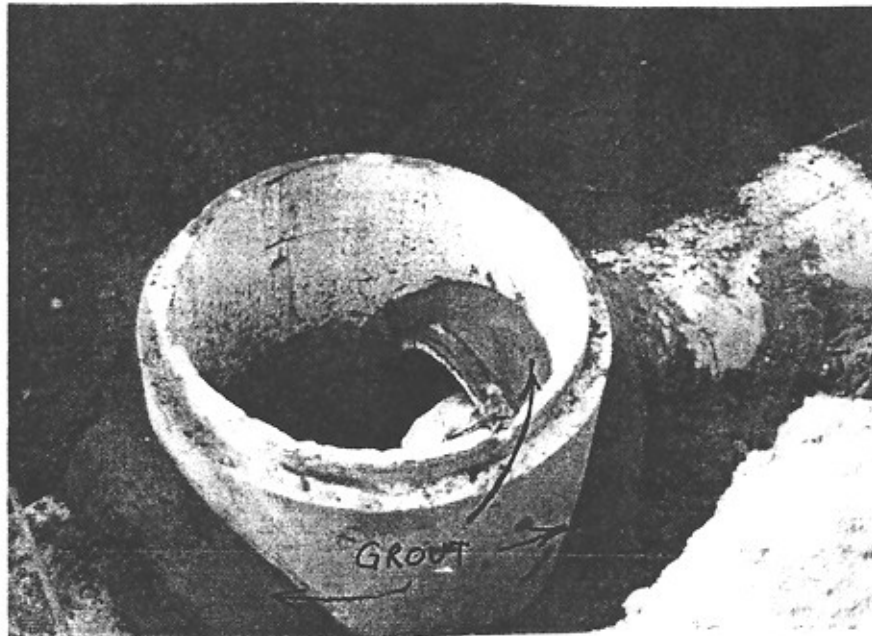
**Structures in Pavement Area** When manhole castings are surrounded by concrete pavement, the casting shall be the same thickness as the concrete pavement.

Where castings are adjacent to, or are surrounded by, concrete pavement, they shall be separated from the concrete pavement by using 3/8" minimum thickness performed joint filler.

**Hoods for Catchbasins** Cast iron hoods for catchbasins are to be installed in the walls of the structure as shown on the plans or in the standards. These are to be placed so that a 6 inch seal is formed. Joints between castings and the structure shall be made gas tight by use of cement mortar.

**Mortar Mixture** Mortar for laying brick or block shall be 1 part masonry cement and 2 parts mortar sand. The mortar for plastering a brick or block structure maybe the same or it maybe made using 1 part Portland cement, 1 part hydrated lime and 2 parts mortar sand. The lime shall not exceed 10% of the cement.

**Precast Structure Openings** When using precast structure components the opening for the pipe may be either preformed or field cut. The gap between the structure and the pipe shall be filled using Class A concrete. If openings are cast or cut in the wrong locations, they shall be filled satisfactorily and the new holes placed in required location. The cost to cut or form holes and seal the pipe with a concrete collar is included in the structure cost. (See picture on the following page.)



**BASE SECTION OF A 48" MANHOLE (NOTE CONCRETE COLLAR)**  
**(Also note that the pipe should have been cut off flush)**

**Structure  
Joints**

Horizontal joints may be used in the construction of precast structures. The contractor or supplier shall submit drawings showing location of joints, type of joints and type of sealers to be used for approval prior to construction of these units. No joint shall be closer than 3" above standing water for those catchbasins requiring hoods.

**Adjustments**

There will be no cost adjustment for precast structures that are required to be located in a different location or require height adjustment to meet necessary grade. These cost shall be included in the structure costs.

**GRADE ADJUSTMENT TO EXISTING STRUCTURES**

**Adjusting  
Existing  
Structures**

When grade adjustment for existing structures is required, the casting frame, covers, or gratings shall be removed and the walls of the structure reconstructed as required to meet the necessary elevation. If an existing casting is unfit for reuse, it will be replaced with the type specified. If an existing casting is in good condition and is of the type required, it may be possible to adjust the elevation by the use of risers or adjusting rings.

|                                          |                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Replacing Castings</b>                | When replacing castings, they shall be replaced with the type specified and adjusted to the required grade. This grade adjustment includes up to 12 inches of masonry reconstruction in average height. It also includes cleaning of the existing structure and keeping it clean till final acceptance of the work. |
| <b>Reconstructed Structures</b>          | If masonry reconstruction exceeds 12", that portion above 12" is to be paid as a reconstructed structure of the type of inlet, manhole, or catchbasin specified.                                                                                                                                                    |
| <b>Castings in Pavement Area</b>         | When castings adjusted to grade are in concrete pavement, or adjacent to concrete pavement, they shall be separated from the concrete by at least 3/8" performed joint filler. This cost is to be included in the cost of other items.                                                                              |
| <b>Adjustment On Resurface Contracts</b> | On resurface contracts, unless otherwise permitted, castings shall be adjusted prior to placing the surface course.                                                                                                                                                                                                 |

#### **PAYMENT OF MANHOLE, INLETS, AND CATCHBASINS**

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Basis of Payment</b>           | Payment is made for the placed quantity of manholes, inlets, or catchbasins by the specified type each. Castings are paid as each, for type specified. Castings furnished and adjusted to grade (not exceeding 12" of masonry work) are paid as each for the type specified. The portion of masonry work necessary above 12" average height is paid for by the linear foot and type of structure specified. |
| <b>Miscellaneous Requirements</b> | Excavation, backfill, reinforcing steel, replacing pavement and other miscellaneous items necessary to complete the work will not be paid for, but shall be included in the cost of other items.                                                                                                                                                                                                            |